REMARKS

I. Introduction

Claims 14 to 18 and 23 to 25, of which claims 23 to 25 have been previously withdrawn, are pending in the present application. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Rejection of Claims 14 to 18 Under 35 U.S.C. § 103(a)

Claims 14 to 18 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 3,562,109 ("Bezold et al."). It is respectfully submitted that Bezold et al. does not render unpatentable the present claims for at least the following reasons.

In maintaining the present rejection, the Examiner states that the feature of conducting calculations before manufacturing the assembly "is not recited in rejected claims(s)." Office Action at page 2. In this regard, it is respectfully noted that in the nuclear energy field, nuclear energy companies must obtain a license from regulatory commissions to be allowed to manufacture any element of a fuel reactor, e.g., a fuel assembly. Such a license is granted on the basis of a design report. This is confirmed by the United States Nuclear Regulatory Commission's "Appendix B to Part 50--Quality Assurance Criteria for Nuclear Plants and Fuel Reprocessing Plants" (hereinafter, "Quality Assurance Criteria"), which is being concurrently filed in an Information Disclosure Statement. The Quality Assurance Criteria stresses by use of the words "to be applied" instead of just "applied" that manufacturing takes place after designing. It is therefore clear to one of ordinary skill in the art that the "designing" as recited in claim 14 must take place ***before manufacturing***.

Further, Bezold et al. is silent as to how the design method is actually carried out and as to what calculations -- if any -- are performed. Regardless, Bezold et al. is interested in the number of constrictions and the width of the annular gaps formed between the control rod and the constrictions. See, e.g., col. 3, lines 5 to 10. Therefore, ***Bezold et al. does not disclose, or even suggest, conducting the calculations recited in claim 14***.

The Examiner also states that "the Bezold et al. method is intended to avoiding [sic] damages NOT ONLY to the control rod but also to the guide tube or a

damping portion . . . ." Office Action at page 3. In this regard, Bezold et al. explains that in the case of an excursion, it is possible to deactivate the reactor by dropping the control rods. Col. 1, lines 31 to 36. According to Bezold et al., it is then necessary to ***brake the control rods*** to ***avoid damaging the reactor core***. See col. 1, lines 37 to 41. Bezold et al. goes on to indicate that lower damping portions have been provided in the guide tubes ***to that end***. See col. 1, lines 40 to 42. However, according to Bezold et al., these prior devices have the disadvantage of damaging the control rods because of the suddenness of the breaking force applied to control rods. See col. 1, lines 49 to 54. When Bezold et al. states at col. 1, lines 59 to 66 that one goal of the invention is to avoid the possibility of damaging the control rods, this first goal is achieved through the smoothing of the braking force as shown in Fig. 3b. However, when the text at col. 1, lines 59 to 66 continues to state that another goal is to avoid the possibility of damaging the nuclear core, this second goal is achieved ***not through the smoothing effect, but through the presense of the lower damping portion***. Thus, Bezold et al. does not disclose, or even suggest, that determining the falling speed or the braking force, or optimizing these two parameters, would allow the reduction of damage to the nuclear core and, in particular, avoiding damage to the very specific elements that are the guide tubes. Lending further confirmation are the RCC-C Design and Construction Rules for Nuclear Power Plants (hereinafter "RCC-C Rules"), an excerpt of which is being concurrently filed in an Information Disclosure Statement. The RCC-C Rules at page 239, state the functional requirements for a fuel assembly. However, the RCC-C Rules are silent as to any specific care that should be taken to avoid damage to the damping portions.

The Examiner further asserts that "calculating a maximum circumferential stress produced in a lower damping portion based on a maximum elevated pressure, is inherently part of the process of optimizing the braking or damping action of the design of the hydraulic fall break of the control rod in Bezold et al." Office Action at page 4. The Examiner continues, stating that "[s]uch maximum circumferential stress has to be known (e.g., by approximation or calculation) and not exceeded because otherwise the guide tube and the shock absorber would be damaged." Id. Applicants respectfully disagree.

As an initial matter, to rely on inherency, the Examiner must provide a "basis in fact and/or technical reasoning to reasonably support the determination that

the allegedly inherent characteristics ***necessarily*** flows from the teachings of the applied art." (See M.P.E.P. § 2112; emphasis in original; and see Ex parte Levy, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int'f. 1990)). Thus, the M.P.E.P. and the case law make clear that simply because a certain result or characteristic may occur in the prior art does not establish the inherency of that result or characteristic.

Indeed, it is possible to calculate the progression of the falling speed of a control rod, and the breaking force exerted on the control rod, ***without calculating the elevated pressure***. This is confirmed by the present application where the elevated pressure is calculated ***after*** and on the basis of the calculated progression of the falling speed.

As regards the Examiner's contention that "[s]uch maximum circumferential stress has to be known (e.g., by approximation or calculation) and not exceeded because otherwise the guide tube and the shock absorber would be damaged," it is noted that, even if no damage should be brought to the damping portions, ***nothing indicates that a stress would be calculated in Bezold et al.***, much less the ***specific (i.e., circumferential) stress*** recited in claim 14.

To the contrary, Bezold et al., which is not interested in the damages potentially brought to the guide tube, does not teach to check, prior to manufacturing, that the maximum allowable stresses are not exceeded.

As indicated above, Bezold et al. does not disclose, or even suggest, all of the features recited in claim 14. As such, it is respectfully submitted that Bezold et al. does not render unpatentable claim 14.

Claims 15 to 18 ultimately depend from claim 14 and therefore include all of the features recited in claim 14. As such, it is respectfully submitted that Bezold et al. does not render unpatentable these dependent claims for at least the same reasons set forth above in support of the patentability of claim 14.

As regards claim 16, it is further noted that the subject matter of claim 16 is not disclosed or suggested by Bezold et al. for at least the additional reason that Bezold et al. does not disclose or suggest using different gap values within the calculation steps. Indeed, even if assuming, arguendo, that Bezold et al. teaches to vary the actual gap between the control rod and the constriction, Bezold et al. does not teach to use different gap values ***within calculation steps***.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

III. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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